

WHAT IS CLAIMED IS:

1. A system, comprising:
- an energy source;
  - a first fiber coupled to the energy source so that pump energy from the energy source can be transferred to the first fiber;
  - a second fiber;
  - a WDM capable of transferring the pump energy from the first fiber to the second fiber; and
  - a fiber Bragg grating in the second fiber, the fiber Bragg being capable of substantially reflecting energy at a predetermined wavelength,
- wherein the first fiber is devoid of a fiber Bragg grating capable of substantially reflecting energy at the predetermined wavelength.
2. The system of claim 1, wherein the second fiber is in the shape of a loop.
3. The system of claim 1, wherein the second fiber is in the shape of a circular loop.
4. The system of claim 1, wherein the predetermined wavelength comprises energy having a Stoke shifted wavelength.
5. The system of claim 4, wherein the Stoke shifted wavelength has an order greater than one.
6. The system of claim 5, wherein the order is two.
7. The system of claim 5, wherein the order is three.
8. The system of claim 5, wherein the order is four.
9. The system of claim 5, wherein the order is five.

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1 10. The system of claim 1, further comprising a second fiber Bragg grating in the second  
2 fiber, the second fiber Bragg grating being capable of substantially reflecting energy at a  
3 second predetermined wavelength different than the first predetermined wavelength,  
4 wherein the first fiber is devoid of a fiber Bragg grating capable of substantially  
5 reflecting energy at the second predetermined wavelength.

1 11. The system of claim 1, further comprising: a third fiber, a second WDM, and a second  
2 fiber Bragg grating, the second fiber grating being in the third fiber, the second WDM  
3 being capable of transferring pump energy between the first and third fibers.

1 12. The system of claim 11, wherein the third fiber is in the shape of a loop.

1 13. The system of claim 11, wherein the third fiber is in the shape of a circular loop.

1 14. The system of claim 11, wherein the second predetermined energy comprises energy  
2 having a Stoke shifted wavelength.

1 15. The system of claim 11, further comprising a third fiber Bragg grating capable of  
2 substantially reflecting the pump energy, the third fiber Bragg grating being in the first  
3 fiber.

1 16. The system of claim 15, wherein the second WDM is between the energy source and the  
2 third fiber Bragg grating.

1 17. The system of claim 1, further comprising a second fiber Bragg grating capable of  
2 substantially reflecting the pump energy, the third fiber Bragg grating being in the first  
3 fiber.

1 18. The system of claim 17, wherein the WDM is between the energy source and the second  
2 fiber Bragg grating.

1 19. The system of claim 1, further comprising a coupler and a third fiber, the coupler being  
2 capable of transferring the predetermined energy from the second fiber to the third fiber.

3 20. The system of claim 19, further comprising a second fiber Bragg grating in the third  
4 fiber, the second fiber Bragg grating being capable of substantially reflecting the  
5 predetermined energy.

6 21. A system, comprising:  
7 an energy source capable of producing pump energy;  
8 a fiber coupled to the energy source so that the pump energy can be transferred from the  
9 energy source to the fiber, the fiber having a loop-shaped portion, a first non loop-shaped  
10 portion, and a second non loop-shaped portion;  
11 a first fiber Bragg grating in the first non loop-shaped portion of the fiber, the first fiber  
Bragg grating being capable of substantially reflecting the pump energy;  
a second fiber Bragg grating in the second non loop-shaped portion of the fiber, the  
second fiber Bragg grating being capable of substantially reflecting energy having a  
wavelength comprising a Stoke shifted wavelength.

1 22. The system of claim 21, further comprising a third fiber Bragg grating in the second non  
2 loop-shaped portion of the fiber, the third fiber Bragg grating being capable of  
3 substantially reflecting energy having a wavelength comprising a second Stoke shifted  
4 wavelength.

1 23. The system of claim 22, further comprising a fourth fiber Bragg grating in the second non  
2 loop-shaped portion of the fiber, the third fiber Bragg grating being capable of  
3 substantially reflecting energy having a wavelength comprising a third Stoke shifted  
4 wavelength.

1 24. The system of claim 21, further comprising a coupler and a second fiber, the coupler  
2 being capable of transferring energy at a predetermined wavelength from the first fiber to  
3 the second fiber.

1 25. The system of claim 24, wherein the predetermined energy has a wavelength comprising  
2 the Stoke shifted wavelength.

1 26. The system of claim 23, wherein the predetermined energy has a wavelength comprising  
2 the Stoke shifted wavelength.

1 27. The system of claim 22, wherein the predetermined energy has a wavelength comprising  
2 the Stoke shifted wavelength.

1 28. The system of claim 21, wherein the predetermined energy has a wavelength comprising  
2 the Stoke shifted wavelength.

1 29. A system, comprising:

2 An energy source capable of producing pump energy;

3 A fiber coupled to the energy source so that the pump energy from the energy source can  
4 be transferred to the fiber;

5 A first pair of fiber Bragg gratings in the fiber, the gratings in the first pair being capable  
6 of substantially reflecting energy at a first wavelength corresponding to a first order  
7 Stoke shifted energy;

8 A second pair of gratings in the fiber, the gratings in the second pair being capable of  
9 substantially reflecting energy at a second wavelength corresponding to an order of  
10 Stoke shifted energy that is greater than one; and

11 A third pair of gratings in the fiber, the gratings in the third pair being capable of  
12 substantially reflecting energy at a third wavelength corresponding to an order of  
13 Stoke shifted energy that is greater than the second wavelength,

14 Wherein the space between the second pair of gratings is devoid of a grating in the third  
15 pair of gratings.